Chimpanzee, when the anatomy of these apes excited less interest, I did not examine the male generative organs with sufficient care, and I inferred, as others had done, that no bone was present. In my more recent examinations I have been more minute, and, to my surprise, I find that both the Chimpanzee and Orang have a penis-bone as exhibited in the preparations before the Society and in the drawing which I now exhibit. (See woodcut, p. 48.)

I first discovered this bone in a young Orang, and next in two Chimpanzees, now in my possession. Through the kindness of Mr. Flower, conservator of the Hunterian Museum, I examined all the male anthropoid apes in spirits at the College of Surgeons. In a very young Chimpanzee weighing about 5 lbs., and having only four incisor teeth, I found this bone small and acicular. In two Orangs, about two years of age, it appeared to be of about the size of the specimens before the Society; but in these I judge only from *external* examination. This bone, I believe, is present in the Gorilla also, an animal that in many respects is more distant from the human family than the Chimpanzee. The bone in these young anthropoid apes (Orang and Chimpanzee) is about one-third of an inch in length, and about a line in width, with the extremities slightly enlarged. In the Chimpanzee it is rather shorter and thicker. What size it attains in the adult animal remains to be seen: it is probably as large as, or perhaps larger than the same bone in many of the lower Quadrumana. There is one thing, however, tolerably certain, that the presence of this bone is an indication of a great degree of inferiority, as regards place and position, in the animal scale.

6. On the Anatomy and Habits of the Water-Ousel (Cinclus aquaticus). By Edwards Crisp, M.D., F.Z.S, etc.

I have for a long time been occupied in preparing a work on the British Birds, more especially in reference to their structure, in connexion with their habits, the nature of their food, &c.; and there is no bird that has puzzled me so much as the Water-Ousel, and it is on this account that I bring the subject before the Society, hoping that I may obtain some information from the members present. I need not go very minutely into the history of this bird; but it will, I think, be interesting to compare some parts of its anatomy with those of the other *Merulidæ*. The object of my paper will be to endeavour, first, to ascertain by what means this bird, so unlike all aquatic birds in form, is enabled to dive and remain some time under water and capture its prey; secondly, to inquire respecting the nature of its food, and its supposed depredations on the ova and fry of fishes. I may premise that I have shot several of these birds in Scotland for the purpose of ascertaining the character of their food, and that I have had many opportunities of observing their habits. The three specimens on the table were sent to me recently (Nov. 30) by my friend Mr. Grierson, of Thornhill, Dumfriesshire; and I have dissected and

examined them, as I had done on former occasions, in relation to the two questions above referred to. As the evidence of one inquirer in reference to the habits of this or of any other bird is comparatively valueless, let me quote a few authorities upon the subject.

Montagu, in his Ornithological Dictionary, says he "discovered the nest of this bird in consequence of the old bird flying, with a fish in its bill, to the young. These were nearly fledged, but incapable of flight; and the moment the nest was disturbed, they fluttered out and dropped into the water, and, to our astonishment, instantly vanished, but in a little time made their appearance at some distance down the stream, and it was with difficulty two out of five were taken, as they dived on being approached. The motion under water," he says, "is effected by short jerks from the shoulder-joint, not, as in all other diving-birds, with extended wings."

Yarrell dissected this bird, and found nothing in its structure to account for its diving and remaining on the ground without any muscular effort.

Mr. Macgillivray (Naturalist, vol. i. p. 105) says, "I have seen the Dipper moving under water in situations where I could observe it with certainty, and I readily perceived that its actions were similar to those of the Divers, Mergansers, and Cormorants, which I have often watched from an eminence as they pursued the shoals of sand-eels along the sandy shores of the Hebrides. It in fact flew, not merely using the wing from the carpal joint, but extending it considerably, and employing its whole extent as if moving in the air. The general direction of the body is obliquely downwards; and great force is evidently used to counteract the effects of gravity, the bird finding it difficult to keep at the bottom."

Other observers have given similar testimony, some asserting that bubbles of air appeared on the surface after the bird was submerged: but these must have arisen from the disturbance of the earth at the bottom of the river; for no diving-bird, I believe, emits air from its lungs when under water. The air is got rid of before the act of diving takes place. But let me now speak of some parts of the anatomy of this bird, before I attempt to answer the first question. The average weight of this bird is said to be $2\frac{1}{2}$ oz.; but in four that I have weighed the average weight has been about $2\frac{1}{4}$ oz., the males being a little heavier than the females; the length $7\frac{1}{4}$ inches, and 11 inches from the tip of each wing. The brain weighed 10 grains, the eyes 12 grains, the skin and feathers 132 grains, the pectoral muscles 135 grains. The gizzard moderately thick, and lined with a tough cuticle. The length of the whole alimentary tube was 16 inches; the œsophagus, as in the other *Merulidæ*, not dilated into a crop. The trachea of nearly uniform calibre, and consisting of 36 rings; the vocal muscles largely developed, as in the other members of this family. The tail-glands comparatively of large size.

I have depicted all the above parts in the drawing before the Society; but the parts of the anatomy of this bird to which I am anxious to direct attention are the shortness of the wing and the great development of the wing-muscles—features which I believe will in

a great measure account for the diving-powers of this bird and its progress under water. As might be expected, too, from the frequent motion of the tail, the caudal muscles are much developed. On comparing the visceral anatomy of this bird with that of the other British *Merulidæ*, all of which I have dissected, with the exception of White's Thrush (*Turdus whitei*), very little proportional difference is observed. The length of the intestinal tube in the Redwing (*T. iliacus*) is 14 inches; the brain weighs 16 grains, the pectoral muscles 170 grains, the weight of the body being about $2\frac{1}{2}$ oz. In the Fieldfare (*T. pilaris*), weighing $4\frac{1}{2}$ oz., the brain weighs 26 grains, and the intestinal tube measures 22 inches. In the Ring-Ousel (*T. torquatus*), weight 3 oz. 180 grains, the alimentary canal is $13\frac{1}{2}$ inches in length, and the weight of the brain is 26 grains; and these parts in the Missel-Thrush (*T. viscivorus*), in the Blackbird (*T. merula*), and Song-Thrush (*T. musicus*) are of nearly the same proportionate length and weight. In the young Water-Ousel that I have dissected, I observed nothing remarkable in its anatomy. So that, as regards the visceral anatomy, there is no important difference between the Water-Ousel and the other members of this group, although among the British Merules this is the only bird that feeds exclusively on animal food; but, to show how the habits of a bird may be altered in this respect, I have mentioned a young Water-Ousel that was reared under a Bantam, and fed on porridge (P. Z. S. 1859, p. 200).

Some writers upon this bird have spoken of the claws as being well adapted for holding on to stones and other objects at the bottom of the water; but on comparing the claws of the Water-Ousel with those of the other *Merulidæ*, it will be seen that the bird has no advantage of this kind, although the comparatively blunted form of the claw would lead to the inference that it is used for the purpose mentioned.

The bones of the Water-Ousel, like those of the other British members of this group, contain no air*; and it is singular that the skeleton of the Fieldfare, Redwing, and Missel-Thrush (birds of passage) should in this respect resemble that of the short-flighted Water-Ousel.

As regards the food, I am afraid that we cannot entirely acquit this bird of occasionally destroying the fry of fish; but I know of no reliable evidence to prove that it takes the ova. In the three specimens before the Society, the gizzards of all contained Entomostraca, and one of them a Gordian (*Gordius aquaticus*). In others that I have dissected, I have discovered chiefly Entomostraca and the larvæ of *Phryganea*; indeed I have found that its food is very similar to that of the young Salmon (*Salmo salar*).

Mr. Gould, in his present work 'The Birds of Great Britain' (part 1), mentions that he examined five of these birds that were shot on the River Usk, in Nov. 1859, and that no trace of spawn was found in any of them; their hard gizzards were entirely filled with the larvæ of *Phryganea* and the Water-beetle (*Hydrophilus*). One had a small Bullhead (*Cottus gobio*), which the bird had doubtless

* I need scarcely say that some of the cranial bones of birds, like those of mammals, contain air.

taken from under a stone. Mr. Gould thinks that, by destroying insects and their larvæ that may attack the ova and fry of fishes, these birds may do great service.

Mr. Macgillivray found beetles and water shells (*Lymnea* and *Ancylus*) and the larvæ of *Ephemera*, *Phryganea*, and other aquatic insects.

Sir W. Jardine, in his 'Birds of Great Britain,' says, "In one part of Scotland, sixpence per head is given for these birds. In another district, 548 were killed in three years." He adds, "The ova of any kind of fish we have never detected in the stomach or intestines; nor do we think that they habitually frequent the places where the spawn would be deposited; and if they did, we would deem it almost impossible that they could reach it after it was covered in the spawning-bed," &c.

So that I hope we may fairly acquit this interesting little bird of the depredations of which it has so often been accused; but I hope that we shall ere long see the Water-Ousel, with the Little Grebe (*Podiceps minor*), in the Society's fish-house, where a better opportunity will be afforded of learning its habits.

As is well known, this bird has been variously classed by different writers. Mr. Gould, in the work before quoted, says he regards *Cinclus* as one of the isolated forms of ornithology, and that it has some remote alliance with the genera *Troglodytes* and *Scytalopus* and their allies. In my next communication I hope, by a careful comparison of the skeleton of this bird with those of the other *Merulidæ*, to come to a more definite conclusion on this subject.

7. On the Synonymy of Sistrum cancellatum. By W. Harper Pease, Corr. Mem.

We find a great discrepancy, as to the name of this species, among the several authors who have noticed it. It was originally described by Quoy and Gaimard (Voyage de l'Astrolabe, vol. ii. p. 563, pl. 37. figs. 15, 16) as *Purpura cancellata*.

The next author who noticed it was De Blainville in his Monograph of *Purpura*, Nouv. Ann. du Mus., 1832, p. 221. He refers correctly to the 'Voyage de l'Astrolabe,' but names it "*P. fenestrata*," possibly by mistake in copying. His name is consequently a synonym of *P. cancellata*. Deshayes, in his edition of Lamarck, gives the description as *P. fenestrata*, Blainv., referring correctly to the figure and description by Quoy and Gaimard, as well as to that of De Blainville. Kiener, most surprisingly, does not notice it. Reeve discards both the names of Blainville and Quoy & Gaim., but describes and figures it more correctly than had been done previously, under the name *P. elongata*, Blainv. We can find no description of such a species by De Blainville. In his Monograph, however, on pl. 10, fig. 9, a shell is figured to which he attaches the name *P. elongata*; but no corresponding description appears in the text. Dr. Gould, in his 'Mollusca of the U. S. Exploring Expedition,' figures and describes the animal, following Reeve in naming it *P. elongata*, Blainv.; but he refers to